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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
CHU, CHRIS C				
ART UNIT		PAPER NUMBER		
2815				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/577,142

Applicant(s)

MARION, FRANCOIS

Examiner

CHRIS C. CHU

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 4, 6, 8 - 13 and 17 - 27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 4, 6, 8 - 13 and 17 - 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on June 17, 2008 has been received and entered in the case.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because:
 - (A) They do not include the following reference sign(s) mentioned in the description:
 - a. On page 7, line 10, the reference numbers "E1" and "E2" are not referenced in the drawings.
 - (B) They include the following reference character(s) not mentioned in the description:
 - a. In Fig. 2A, the reference numbers "L1" and "L2" are not disclosed in the specification.
 - b. In Fig. 3, the reference number "A" is not disclosed in the specification.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not

accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Since applicant does not amend the drawing, specification or provide a remark, the objection to the drawing is maintained.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4, 6, 9 – 12, 17, 18, 20 – 25 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Katoh et al. (U. S. Pat. No. 4,743,868).

Regarding claim 1, Katoh et al. discloses in e.g., Fig. 2 an electronic device (the device in e.g., Fig. 2) comprising:

- an active element (6; column 3, lines 12 – 14), comprising a semiconductor component (the hybrid integrated circuit; column 3, lines 12 – 14) comprising at least one of a photon or radiation detector, a photon or radiation emission device, a mechanical means, an electromechanical means, and a MEMS, said active element having a first and a second face (see e.g., Fig. 2), the first face (the surface where the pads 6d are formed) being provided with electrical connections (the electrical connections that include 6ds and the other electrically connections, i.e. pads under the

- electronic elements; column 4, lines 9 and 10), arranged on one side only of said active element (6; see e.g., Fig. 2),
- a transfer element (4; column 3, line 33. Since applicant does not specifically claim that the transfer element is a printed circuit board or interposer or carrier and the element 4 of Katoh et al. transfers heat from the element 6 to the other element, i.e., air, hence the element 4 of Katoh et al. reads as the transfer element), comprising a first face and a second face (see e.g., Fig. 2) and being assembled to the second face of the active element (6) through its first face (see e.g., Fig. 2), and electrical connections (3d; column 3, line 35) on its second face (the surface where the pads 3d are formed), this transfer element (4) being designed to be assembled on another circuit (1; column 3, line 5) on the side of its second face (see e.g., Fig. 2); and
 - at least one wire connection (7d; column 4, lines 3 and 4) between the electrical connections (6d and 3d) of the first face of the active element (6) and the second face of the transfer element (4; see e.g., Fig. 2).

Regarding claim 2, Katoh et al. discloses in e.g., Fig. 2 the transfer element (4) being assembled to the second face of the active element (6) by a layer of glue, a glue film, a glue strip or soldering means (5; column 3, lines 23 – 26 and 35 – 38).

Regarding claim 4, Katoh et al. discloses in e.g., Fig. 2 the transfer element (4) further comprising a ceramic element (column 3, lines 33 – 34).

Regarding claim 6, Katoh et al. discloses in e.g., Fig. 2 said active element (6) comprising at least one of a CMOS circuit, a CCD circuit, an interconnections network (column 3, lines 11 – 14), and a bipolar circuit .

Regarding claim 9, Katoh et al. discloses in e.g., Fig. 2 a mechanical or electromechanical device (column 3, lines 12 – 14), or a MEMS, hybridized on said first face of said active element (6A; see e.g., Fig. 2).

Regarding claim 10, Katoh et al. discloses in e.g., Fig. 2 an element hybridized on the first face of said active element (6) covering the electrical connections (the electrical connections that include 6ds and the other electrically connections, i.e. pads under the electronic elements; see e.g., Fig. 2) located on said first face of said active element (6; see e.g., Fig. 2).

Regarding claim 11, Katoh et al. discloses in e.g., Fig. 2 the second face of the transfer element (4) further comprising connection balls, pins or pads (2d; see e.g., Fig. 2).

Regarding claim 12, Katoh et al. discloses in e.g., Fig. 2 an electronic system comprising one or more electronic devices according to claim 11 (see e.g., Fig. 2), each transfer element (4) in the one or more electronic devices being connected or fixed to a common substrate (1; the external device, i.e., the mother board) through connection balls, pins or pads (2d; see e.g., Fig. 2).

Regarding claim 17, Katoh et al. discloses in e.g., Fig. 10 – Fig. 12 an electronic device (the device in e.g., Fig. 2) comprising:

- a) an active element (6A; column 6, line 54), comprising a semiconductor component (the hybrid integrated circuit; column 3, lines 12 – 14), said active element (6A) having a first and a second face (see e.g., Fig. 12), the first face being provided with electrical connections (the electrical connections that include 6Ds and the other electrically connections, i.e. pads under the electronic elements; see e.g., Fig. 10), arranged on only one side of said active element (6A; see e.g., Fig. 12);

- b) a transfer element (4), comprising a first face and a second face and being assembled to the second face of the active element (6A) through its first face (see e.g., Fig. 12), and having electrical connections (3I; column 7, line 33) on its second face (see e.g., Fig. 12), the transfer element (4) being designed to be assembled on another circuit (1) on the side of its second face (see e.g., Fig. 12);
- c) at least one of:
 - a photon or radiation detector,
 - a photon or radiation emission device,
 - a mechanical or electromechanical device (column 3, lines 12 – 14), and
 - a MEMS,being hybridized onto the first face of said active element (6; see e.g., Fig. 10); and
- d) at least one wire connection (12i; column 7, lines 29 and 30) between the electrical connections (6D and 3I) of the first face of the active element (6A) and the second face of the transfer element (4; see e.g., Fig. 12).

Regarding claim 18, Katoh et al. discloses in e.g., Fig. 10 – Fig. 12 the transfer element (4) being assembled to the second face of the active element (6A) by a layer of glue, a glue film, a glue strip, or soldering means (column 6, line 68 – column 7, line 7).

Regarding claim 20, Katoh et al. discloses in e.g., Fig. 10 – Fig. 12 the transfer element (4) further comprising a ceramic element (column 3, lines 33 – 34).

Regarding claim 21, Katoh et al. discloses in e.g., Fig. 10 – Fig. 12 said active element (6A) comprising at least one of a CMOS circuit, a CCD circuit, an interconnections network (column 3, lines 12 – 14), and a bipolar circuit.

Regarding claim 22, Katoh et al. discloses in e.g., Fig. 10 – Fig. 12 said active element (6A) further comprising at least one of a photon or radiation detector, a photon or radiation emission device, a mechanical means, a electromechanical means (column 3, lines 12 – 14), and a MEMS.

Regarding claim 23, Katoh et al. discloses in e.g., Fig. 10 – Fig. 12 said at least one of a photon or radiation detector, a photon or radiation emission device, a mechanical or electromechanical device (column 3, lines 12 – 14), and a MEMS, hybridized on said first face of said active element (6A), covering the electrical connections (the electrical connections that include 6Ds and the other electrically connections, i.e. pads under the electronic elements; see e.g., Fig. 10) located on said first face (see e.g., Fig. 10).

Regarding claim 24, Katoh et al. discloses in e.g., Fig. 10 – Fig. 12 said second face of the transfer element (4) further comprising connection balls, pins (11d; column 7, line 16), or pads.

Regarding claim 25, Katoh et al. discloses in e.g., Fig. 10 – Fig. 12 an electronic system (the system in e.g., Fig. 12) comprising: one or more electronic devices (the device in e.g., Fig. 12) according to claim 17 (see e.g., Fig. 12), each transfer element (4) in the one or more electronic devices being connected or fixed to a common substrate (1) through connection balls, pins (11d; see e.g., Fig. 12), or pads.

Regarding claim 27, Katoh et al. discloses in e.g., Fig. 10 – Fig. 12 an electronic device (the device in e.g., Fig. 12) comprising:

- a) an active element (6A), comprising a semiconductor component (the hybrid integrated circuit; column 3, lines 12 – 14), said active element (6A) having a first

and a second face (see e.g., Fig. 12), the first face being provided with electrical connections (6D), arranged on only one side of said active element (6A; see e.g., Fig. 12);

- b) a transfer element (4), comprising a first face and a second face and being assembled to the second face of the active element (6A) through its first face (see e.g., Fig. 12), and having electrical connections (3I) on its second face (see e.g., Fig. 12), the transfer element (4) being designed to be assembled on another circuit (1) on the side of its second face (see e.g., Fig. 12);
- c) at least one of:
 - a photon or radiation detector,
 - a photon or radiation emission device,
 - a mechanical or electromechanical device (column 3, lines 12 – 14), and
 - a MEMS,being hybridized onto the first face of said active element (6A; see e.g., Fig. 10) and covering at least part of said electrical connections (the electrical connections that include 6Ds and the other electrically connections, i.e. pads under the electronic elements; see e.g., Fig. 10) of said first face of said active element (see e.g., Fig. 10); and
- d) at least one wire connection (12i) between the electrical connections (6D and 3I) of said first face of said active element (6A) and said second face of said transfer element (4; see e.g., Fig. 12).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katoh et al. in view of Kimura (U. S. Pat. No. 5,396,104).

Regarding claims 3 and 19, while Katoh et al. discloses the use of the wire connection, Katoh et al. does not disclose the wire connection being covered by a protection layer. Kimura teaches in e.g., Fig. 2 a wire connection (1; column 3, line 49) being covered by a protection layer (3; column 3, lines 49 and 50). It would have been obvious to one of ordinary skill in the art at the time when the invention was made to apply the protection layer of Kimura to cover the wire connection of Katoh et al. as taught by Kimura to prevent the occurrence of short-circuiting (column 8, lines 56 – 57).

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katoh et al. in view of DePuydt et al. (U. S. Pat. No. 5,635,718).

While Katoh et al. discloses the use of the active element, Katoh et al. does not disclose a photon or radiation detector hybridized onto the first face of said active element. DePuydt et al. teaches in e.g., Fig. 1 a radiation detector (14; column 4, lines 31 and 32) hybridized onto the first face of an active element (12; column 4, line 31). It would have been obvious to one of ordinary skill in the art at the time when the invention was made to apply the radiation detector

of DePuydt et al. onto the first face of said active element of Katoh et al. as taught by DePuydt et al. to produce a multi-module radiation detecting device (column 4, lines 61 – 63).

8. Claims 13 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katoh et al. in view of Baek et al. (U. S. Pat. No. 6,835,598).

Regarding claims 13 and 26, while Katoh et al. discloses the use of the device, Katoh et al. does not disclose each electronic device being separated from a neighboring electronic device by a distance of less than 60 μm . Baek et al. teaches in e.g., Fig. 12 a distance between the devices (1001 and 1002) being less than 60 μm (since the devices 1001 and 1002 are connected to each other, hence the distance between the devices is zero. Thus, Baek et al. fully meets this limitation). It would have been obvious to one of ordinary skill in the art at the time when the invention was made to apply the distance of Baek et al. into the package of Katoh et al. as taught by Baek et al. to decrease the size of the package.

Response to Arguments

9. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRIS C. CHU whose telephone number is (571)272-1724. The examiner can normally be reached on 11:30 - 8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated

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/Kenneth A Parker/
Supervisory Patent Examiner, Art Unit 2815

Chris C. Chu
Primary Examiner
Art Unit 2815

/Chris C. Chu/
Primary Examiner, Art Unit 2815
Monday, August 11, 2008